2012 – 2015 Incidents and Citations in the Upstream Oil and Gas Industry

Presented by: Kenny Jordan
Dean Wingo
Stan Smith
Introductions

- Kenny Jordan, Executive Director, Association of Energy Service Companies (AESC)
- R. Dean Wingo, Senior Technical Advisor/OSHA Consultant, UTA
- Stan Smith, OSHA Chemical Engineer, Health Response Team
Background

• Boom in upstream O&G with discovery of shale oil and increased use of HF technology in early 2000s.
  ▪ Drilling rig activity up 71% from 2003 to 2013.¹
• Talk of potential energy independence.
• More jobs but more inexperienced hands, workforce doubles from 2003 to 2013.¹
• More wells, longer vertical sections, more frac stages, more simultaneous services...
• >40% of fatalities in transportation incidents.

¹ From ISHN, September 1, 2015.
Background

- New technologies emerge and develop.
- More drilling, well servicing, and facilities (gathering systems, pipelines, etc.) during that period (even with a downturn in 2009).
- Result has been more incidents, injuries and fatalities in the oil patch.
Increased OSHA Attention

- Fatalities up 27.6% from 2003 to 2013.\textsuperscript{1}
- Oil patch fatality rate at 7 times the national average.\textsuperscript{2}
  - \~25/100,000 versus \~3.5/100,000 general industry.
  - South Texas industry and OSHA alliance originally to national now.
- Increased enforcement, publications, stand-downs, news reports, etc.

\textsuperscript{1} From ISHN publication, September 1, 2015.
\textsuperscript{2} From OSHA data September 13, 2012.
2012-2015 OSHA Data

• Split into three major NAICS codes:
  ▪ 211111, Crude petroleum and natural gas extraction.
  ▪ 213111, Drilling oil and gas wells.
  ▪ 213112, Support activities for oil and gas operations.

• Reviewed for accuracy by personnel familiar with the oil patch.

• Includes both incidents, fatalities, and 29 CFR 1910 citations. 5(a)(1)s still being worked.
2012-2015 OSHA Data
NAICS 211111

• Production-related incidents.
• 6 incidents.
• 8 fatalities.
• 2 fire incidents with four fatalities.
• 1 struck by/caught in with one fatality.
• 1 heat stress with one fatality.
• 1 heart attack while inspecting a gas well.
• 1 unknown (found in company man trailer).
2012-2015 OSHA Data

NAICS 211111 Number of Incidents
(6 Total)

- Fire: 2
- Heat Stress: 1
- Struck By-Against & Caught In-Between: 1
- Heart Attack: 1
- Unknown: 1

November 29-30, 2016
2012-2015 OSHA Data
NAICS 213111

- Drilling-related incidents.
- 59 incidents.
- 61 fatalities plus 9 hospitalizations.
- 31 struck-by/caught-in with 31 fatalities.
- 12 falls with 12 fatalities.
- 6 electrocutions with seven fatalities.
- 3 fires with four fatalities.
- 1 heat stress with one fatality.
- 6 unknown/natural causes.
2012-2015 OSHA Data

NAISC 213111 Number of Incidents
(59 Total)
2012-2015 OSHA Data
NAICS 213112

- Support-related incidents.
- 146 incidents.
- 147 fatalities plus 50 hospitalizations.
- 73 struck-by/caught-in with 73 fatalities.
- 25 fires/explosions with 27 fatalities.
- 13 falls with 13 fatalities.
- 12 asphyxiations with 12 fatalities.
- 7 heat stress with 7 fatalities.
- 5 electrocutions with 4 fatalities.
2012-2015 OSHA Data
NAICS 213112 (Cont.)

- 2 chemical exposures with 2 fatalities.
- 1 drowning.
- 8 unknown/natural causes.
2012-2015 OSHA Data

NAICS 213112 Number of Incidents
(146 Total)

- Asphyxiation
- Chemical Exposure
- Drowning
- Electric Shock/Electrocution
- Explosion/Fire
- Fall - Same Level
- Fall From Elevation
- Heat Stress
- Unknown/Natural Causes
- Struck by-Against & Caught In-Between

November 29-30, 2016
2012-2015 OSHA Data

NAICS 211111, 213111 and 213112 Incidents (211 Total)
2012-2015 OSHA Data

NAICS 211111, 213111 and 213112 Incidents (211 Total)

- Struck by-Against & Caught In-Between, 49.8%
- Explosion/Fire, 14.2%
- Electric Shock/Electrocution, 5.2%
- Heat Stress, 4.3%
- Asphyxiation, 5.7%
- Chemical Exposure, 0.9%
- Drowning, 0.5%
- Fall - Same Level, 0.9%
- Fall From Elevation, 11.4%
- Unknown/Natural Causes, 7.1%
2012-2015 OSHA Data
29 CFR 1910 Citations

- 1071 Inspections.
- 3078 Citations. 1353 Serious.
- 567 Electrical (1910.303-.334).
- 359 Handrails (1910.24).
- 336 PPE (1910.132-.138).
- 136 Medical/First aid (1910.151).
<table>
<thead>
<tr>
<th>YEAR</th>
<th>LTA FREQUENCIES</th>
<th>OSHA RECORDABLE FREQ</th>
<th>HOURS</th>
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<tr>
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<td>4.34</td>
<td>7.25</td>
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<td>4.89</td>
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<td>4.43</td>
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<td>1997</td>
<td>4.05</td>
<td>6.16</td>
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<td>1998</td>
<td>4.08</td>
<td>6.29</td>
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<td>1999</td>
<td>3.08</td>
<td>5.64</td>
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<tr>
<td>2000</td>
<td>2.08</td>
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<td>1.54</td>
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<td>2002</td>
<td>3.31</td>
<td>4.88</td>
<td>33,393,227</td>
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<tr>
<td>2003</td>
<td>2.45</td>
<td>3.79</td>
<td>38,835,386</td>
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<td>2004</td>
<td>2.70</td>
<td>3.96</td>
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<td>2005</td>
<td>2.25</td>
<td>3.63</td>
<td>44,275,768</td>
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<td>2006</td>
<td>2.27</td>
<td>3.40</td>
<td>49,553,332</td>
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<td>2007</td>
<td>0.89</td>
<td>3.04</td>
<td>55,110,850</td>
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<td>2008</td>
<td>0.67</td>
<td>2.57</td>
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<td>2009</td>
<td>0.61</td>
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<td>2010</td>
<td>0.71</td>
<td>2.51</td>
<td>49,353,326</td>
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<td>2011</td>
<td>0.73</td>
<td>2.93</td>
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<tr>
<td>2012</td>
<td>0.79</td>
<td>2.46</td>
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<td>2013</td>
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<td>2.13</td>
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<tr>
<td>2015</td>
<td>0.41</td>
<td>1.34</td>
<td>43,735,899</td>
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</tbody>
</table>
COMBINED AESC & IADC SAFETY STATS

[Graph showing trends in Incidence Rate, LTI Rate, and Man-hours from 1994 to 2015.]

November 29-30, 2016
INTERESTING FACTOIDS

• The Statistics over the period of 1994 to 2015 represent over 2.3 BILLION man-hours of work performed, which is equivalent to approximately 1.1 MILLION man-years of work!

• Over that period of time, we have seen from these statistics (both associations combined) a reduction at it’s highest point on TRIR in 1997 of 11.95, to it’s lowest point on TRIR in 1.27 in 2015, a reduction of 841% over a 19 year period of time!

• Even when activity and man-hours were increasing significantly, rates were decreasing.
OSHA STATISTICAL DATA

OSHA DATA FOR NAICS CODE 211111 (Oil & Gas Exploration and Production)

* Data Provided by OSHA
OSHA STATISTICAL DATA

OSHA DATA FOR NAICS CODE 213111 (Drilling Oil and Gas Wells)

* Data Provided by OSHA
OSHA STATISTICAL DATA

OSHA DATA FOR NAICS CODE 213112 (Support Activities for Oil and Gas Operations)

* Data Provided by OSHA
## TABLE SNR01. Highest Incidence Rates of Total Nonfatal Occupational Injury and Illness Cases, 2015(BLS)

<table>
<thead>
<tr>
<th>Industry Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquaculture (Priv ind)</td>
<td>13.6</td>
</tr>
<tr>
<td>Nursing and residential care facilities (St gov't)</td>
<td>12</td>
</tr>
<tr>
<td>Police protection (Local government)</td>
<td>11.3</td>
</tr>
<tr>
<td>Household furniture (except wood and metal) manuf (Priv Ind)</td>
<td>10.8</td>
</tr>
<tr>
<td>Manufactured home (mobile home) manuf (Priv Ind)</td>
<td>10.2</td>
</tr>
<tr>
<td>Fire protection (Local gov't)</td>
<td>10.2</td>
</tr>
<tr>
<td>Veterinary services (Priv Ind)</td>
<td>10</td>
</tr>
<tr>
<td>Motor home manufacturing (Priv ind)</td>
<td>9.5</td>
</tr>
<tr>
<td>Steel foundries (except investment) (Priv ind)</td>
<td>9.1</td>
</tr>
<tr>
<td>Travel trailer and camper manufacturing (Priv ind)</td>
<td>8.6</td>
</tr>
<tr>
<td>Truck trailer manufacturing (Priv ind)</td>
<td>8.3</td>
</tr>
<tr>
<td>Correctional institutions (St gov't)</td>
<td>8.3</td>
</tr>
<tr>
<td>Hospitals (St gov't)</td>
<td>8.1</td>
</tr>
<tr>
<td>Psychiatric and substance abuse hospitals (Priv Ind)</td>
<td>8.1</td>
</tr>
<tr>
<td>Hog and pig farming (Priv Ind)</td>
<td>8</td>
</tr>
<tr>
<td>Heavy and civil engineering construction (Local gov't)</td>
<td>8</td>
</tr>
<tr>
<td>Prefabricated wood building manufacturing (Priv ind)</td>
<td>7.9</td>
</tr>
<tr>
<td>Pet and pet supplies stores (Priv indy)</td>
<td>7.7</td>
</tr>
<tr>
<td>Mattress manufacturing (Priv ind)</td>
<td>7.6</td>
</tr>
<tr>
<td>All Industries including state and local government</td>
<td>3.3</td>
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• 336 PPE (1910.132-.138).
• 237 Hazcom (1910.1200).
• 181 Machine guarding (1910.212-.219).
• 136 Medical/First aid (1910.151).
2012-2015 OSHA Data

Leading Causes of Fatal Accidents

- Struck by, caught in, caught against (49%)
- Fire and Explosion (14.2%)
- Falls (12.3%)
- Asphyxiation (5.7%)
- Electrocution (5.2%)
Citations Don’t Reflect Leading Causes of Accidents

1910 Standard
- Electrical Violations
- Handrails
- PPE
- Haz Com
- Machine Guarding

Leading Causes of Accidents
- Stuck by/Caught in/Against
- Fires and Explosions
- Falls
- Asphyxiation
- Electrocution
Comparison of General Duty Citations with Accident Causes 2012-2015

General Duty Citations
• Struck by /Crushing
• Explosion
• Falling
• Heat
• Unclassified

Leading Causes of Accidents
• Struck by Caught in
• Fire and Explosion
• Falls
• Asphyxiation
• Electrocution
Evaluation of General Duty Citations
2012-2015 Sic 1300

**Inspection / Citations**
- 37 General Duty Citations
- 26 Stuck By/ Crushing
- 3 Explosion
- 3 Falling
- 1 Heat (er)
- 4 Unclassified
- Accident investigation vs. Inspection

**From Violation Description**
- 13 related to Geronimo Line
- 5 related to wire rope or chain failure
- 2 by unexpected pressure release
- 4 falling equipment
- 2 stuck by load
- 5 improper guys/anchors
- 6 Misc.
Questions and Comments

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